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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/822,226	04/08/2004	Sumeet Singh	15670-075001/ SD2004-151	1313

20985 7590 08/11/2008

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EXAMINER	
OKORONKWO, CHINWENDU C	
ART UNIT	PAPER NUMBER
2136	
MAIL DATE	DELIVERY MODE
08/11/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/822,226	SINGH ET AL.	
	Examiner	Art Unit	
	CHINWENDU C. OKORONKWO	2136	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 July 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35,69-79,88 and 89* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-35, 69-79, 88-89* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Remarks/Arguments

1. In response to communications filed on 07/15/2008, Applicant's arguments with respect to the pending claims have been fully considered but they are moot in view of new ground(s) for rejection.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4 are rejected under 35 U.S.C. 102(e) as being unpatentable over Teal (US Patent No. 6,477,651 B1).

Regarding claim 1, Teal, discloses a method for automatically identifying common content to use in identifying an intrusive network attack comprising: obtaining a collection of data (4:23-25 – "data collected") to be analyzed to identify the network attack (4:5-46 – "data collector converter 14 is used for each type of network data collected from the network"); reducing said data items in

said collection to reduce said data collection to a reduced data collection of reduced data items, wherein the reduced data items in the reduced data collection have a smaller size (4:16-27 – "predetermined formats") and a constant predetermined relation with data items in the data collection (4:16-27 – "predetermined formats") and at least some of the data items in the data collection that differ are reduced to the same reduced data item and analyzing a plurality of said reduced data items to detect common elements (4:33-34 – "network data to look for specific patterns "), said analyzing reviewing for common content indicative of a network attack (4:5-46 – "data collector converters 14 collect the network data and convert the network data into predetermined formats for analysis" and "Intrusion detection analysis engine 16 analyzes network data to look for specific patterns that indicate malicious activity on the network").

Regarding claim 2, Teal, discloses a method as in claim 1, wherein said analyzing comprises determining frequently occurring sections of message information (4:5-46 – "Intrusion detection analysis engine 16 analyzes network data to look for specific patterns that indicate malicious activity on the network. These patterns, known as signatures, are generally unique to each type of vulnerability of network.")

Regarding claim 3, Teal, discloses a method as in claim 1, wherein said analyzing comprises determining that increasing number of sources and destinations that are sending and/or receiving data (4:19-27 – "Data source 12 can include network routers and servers that provide network traffic data, audit trail data, system information data, and other data sources. In one embodiment, a data collector converter 14 is used for each type of network data collected from the network.")

Regarding claim 4, Teal, discloses a method as in claim 1, further comprising analyzing for the presence of a specified type of code within said collection of data (col. 1 lines 60-67 – "analyzing an incoming data packet from the public network. The incoming data packet is then matched against known forms of attack on the private network.").

Claim Rejections - 35 USC § 103

3 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 5-35, 69-79 and 88-89 are rejected under 35 U.S.C. 103(a) as being unpatentable over Teal (US Patent No. 6,477,651 B1) and further in view of Adjaoute (US Patent No. 7,089,592 B2).

Regarding claim 5, Teal, is silent in disclosing after said analyzing determines said frequently occurring sections of message information, carrying out an additional test on said frequently occurring sections of message information, however, Adjaoute does provide such a disclosure (11:19-31 – "model component 54 is a program that takes data associated with an electronic transaction and decides whether the transaction is fraudulent ... [it] also takes data associated with network usage and decides whether there is network intrusion ... [and] consists of an extensible collection of integrated sub-models 55, each of which contributes to the final decision").

It would have been obvious for one of ordinary skill in the art, at the time of the invention to have been motivated to combine the inventions of Teal and Adjaoute because both inventions are directed towards intrusion detection systems which analyze network data in determining risks. The motivation and benefit for the combination/modification of Teal is provided by Adjaoute, which recites, "[it is] desirable to provide systems and methods for dynamic detection and prevention of electronic fraud and network intrusion that are able to detect and prevent fraud and network

intusion acreoss multiple networks and industries ... [and] that employ an integrated set of intelligent technologies."

Regarding claim 6, Teal, discloses a method as in claim 5, wherein said carrying out the additional test comprises looking for an increasing number of at least one of sources and destinations of said frequently occurring sections of message information (4:19-27 – "Data source 12 can include network routers and servers that provide network traffic data, audit trail data, system information data, and other data sources. In one embodiment, a data collector converter 14 is used for each type of network data collected from the network.").

Regarding claim 7, Teal, discloses a method as in claim 5, wherein said carrying out the additional test comprises looking for code or opcode (operation code) within the frequently occurring sections (4:33-39 – "Intrusion detection analysis engine 16 analyzes network data to look for specific patterns that indicate malicious activity on the network").

Regarding claim 8, Teal, discloses a method wherein said reducing said data items comprises carrying out a hash function on said data items (4:33-39 – "These patterns, known as signatures, are generally unique to each type of vulnerability of the network.").

Regarding claims 9 and 11-14, Teal, discloses a method wherein said determining frequently occurring sections comprises:

- using at least first, second and third data reduction techniques on each said data item, to obtain at least first, second and third reduced data items, counting said first, second and third reduced data items (Figure 22 and 19:7-28) and
- establishing said frequently occurring sections when all of said at least first second and third reduced data items have a frequency of occurrence greater than a specified amount (19:29-42).

It would have been obvious for one of ordinary skill in the art, at the time of the invention to have been motivated to combine the inventions of Teal and Adjaoute because both inventions are directed towards intrusion detection systems which analyze network data in determining risks. The motivation and benefit for the combination/modification of Teal is provided by Adjaoute, which recites, "[it is] desirable to provide systems and methods for dynamic detection and prevention of electronic fraud and network intrusion that are able to detect and prevent fraud and network intusion acreoss multiple networks and industries ... [and] that employ an integrated set of intelligent technologies."

Regarding claim 10, Teal, discloses a collection of data items comprises a portion of the network payload (4:16-27).

Regarding claim 15, Teal, discloses a method as in claim 14, wherein said first and second monitoring comprises reducing information about said destinations, and storing at least one table about said data reduced information (4:23-25).

Regarding claim 16, Teal, discloses a method as in claim 10, wherein said collection of data items further comprises a portion of a network header (Rejected under the same rationale as claim 10).

Regarding claim 17, Teal, discloses a method as in claim 11, wherein said portion of a network header comprises a port number indicating a service requested by a network packet (Rejected under the same rationale as claim 7).

Regarding claim 18, Teal, discloses a method as in claim 17, wherein said port number comprises a source port or a destination port (Rejected under the same rationale as claim 7).

Regarding claim 19, Teal, discloses a method as in claim 1, wherein said data items comprise a first subset of a network packet including payload and header; and the method further comprises obtaining a second subset of the same

network packet for subsequent analysis (Rejected under the same rationale as claim 10).

Regarding claim 20, Teal, discloses method as in claim 1, further comprising forming a plurality of data items from each of a collection of network packets, each of said plurality of data items comprising a specified subset of the network packets (Rejected under the combined rationales as claim 1).

Regarding claim 21, Teal, discloses a method as in claim 1, further comprising forming a plurality of data items from each of a collection of network packets, each of said plurality of data items comprising a continuous portion of payload and information indicative of a port number indicating a service requested by the network packet (Rejected under the combined rationales as claims 11 and 20).

Regarding claim 22, Teal, discloses a method as in claim 2, wherein said reducing said data items and said determining frequently occurring sections comprises: taking a first hash function of said data items first maintaining a first counter, with a plurality of stages, and incrementing one of said stages based on an output of said first hash function; taking a second hash function of said data items; and second maintaining a second counter, with a plurality of stages, and incrementing one of said stages of said second counter based on an output of said second hash function (Rejected under the combined rationales as claim 8).

Regarding claim 23, Teal, discloses a method as in claim 22, further comprising checking said one of said stages of said first counter and said one of said stages of said second counter against a threshold, and identifying a first reduced data item as associated with frequently occuring content only when both said one of said stages of said first counter and said one of said stages of said second counter are both above said threshold (Rejected under the same rationale as claim 11).

Regarding claim 24, Teal, discloses a method as in claim 23, further comprising adding the first reduced data item to a frequent content buffer table (Rejected under the same rationale as claim 11).

Regarding claim 25, Teal, discloses a method as in claim 24, further comprising taking at least a third hash function of said data items, and incrementing a stage of at least a third counter based on said third hash function, where said identifying said first reduced data item as associated with frequently occurring content only when all of said stages of each of said first, second and third counters are each above said threshold (Rejected under the same rationale as claim 8).

Regarding claim 26, Teal, discloses a method as in claim 22, further comprising obtaining said data items by taking a first part of messages, and subsequently obtaining a new data items by taking a second part of the messages (Rejected under the same rationale as claim 1).

Regarding claim 27, Teal, discloses a method as in claim 26, wherein at least one of said hash functions comprises an incremental hash function (Rejected under the same rationale as claim 8).

Regarding claim 28, Teal, discloses a method as in claim 3, wherein reducing said data items comprise hashing at least one of the source or destination, to form a collection of hash values, first determining a unique number of said hash values, and second determining a number of said one of source or destination addresses based on said first determining (Rejected under the same rationale as claim 8).

Regarding claim 29, Teal, discloses a method as in claim 28, further comprising scaling the hash values prior to said second determining (Rejected under the same rationale as claim 8).

Regarding claim 30, Teal, discloses a method as in claim 29, wherein said scaling comprises scaling by a first value during a first counting session, and

scaling by a second value during a second measurement session (Rejected under the same rationale as claim 8).

Regarding claim 31, Teal, discloses a method as in claim 7, wherein said detecting code comprises looking for a first valid opcode at a first location, based on said first valid opcode, determining a second location representing an offset to said first valid opcode, and looking for a second valid opcode at said second location (Rejected under the same rationale as claim 7).

Regarding claim 32, Teal, discloses a method as in claim 31, further comprising establishing that a first section includes code when a predetermined number of valid opcodes are found at proper distances (Rejected under the same rationale as claim 7).

Regarding claim 33, Teal, discloses a method as in claim 1, further comprising, determining a list of first computers that are susceptible to a specified attack, and monitoring only messages directed to said first computers for said specified attack (Rejected under the same rationale as claim 1).

Regarding claim 34, Teal, discloses a method of claim 33 where said monitoring comprises checking for a message that attempts to exploit a known vulnerability

to which a computer is vulnerable, as said specified attack (Rejected under the same rationale as claim 1).

Regarding claim 35, Teal, discloses a method as in claim 34, wherein said checking comprises checking for a field that is longer than a specified length (Rejected under the same rationale as claim 1).

Regarding claim 69, Teal, discloses a method for automatically identifying common content to use in identifying an intrusive network attack, comprising: monitoring network content on a network, and obtaining at least portions of the data on said network; data reducing said portions of the data using a data reduction function which reduces said portions of the data to reduced data portions in repeatable manner, such that each portion which has the same content is reduced to the same reduced data portion and at least some of the portions that differ are reduced to the same reduced data portion; analyzing said reduced data portions to find network content which repeats a specified number of times, and to establish said network content which repeats said specified number of times as frequent content; identifying address information of said frequent content, wherein the address information includes at least one of source information or destination information that characteristizes the respective of sources and/or destinations, of said frequent content, and determining if a number of sources and/or destinations of said frequent content is increasing; and

identifying the frequent content as associated with the network attack, based on said identifying and determining (Rejected under the same rationale as claim 1).

Regarding claim 70, Teal, discloses a method as in claim 69, wherein said monitoring network content comprises obtaining both portions of the data on the network, and portnumbers indicating a services requested by network packets (Rejected under the same rationale as claims 17 and 18).

Regarding claim 71, Teal, discloses a method as in claim 70, wherein said obtaining portions of the network data comprises: defining a window which samples a first portion of network data at a first time in accordance with a position of the window, and sliding said window to a second position at a second time which samples a second portion of said network data wherein said second position has a specified offset from the first portion (Rejected under the same rational as claim 1).

Regarding claim 72, Teal, discloses a method as in claim 71, wherein said data reduction function comprises a hash function (Rejected under the same rationale as claim 8).

Regarding claim 73, Teal, discloses a method as in claim 72, wherein said data reduction function comprises an incremental hash function Rejected under the same rationale as claim 8).

Regarding claim 74, Teal, discloses a method as in claim 69, wherein data reducing said portions comprises using said data reduction function in a scalable configuration (Rejected under the same rationale as claim 8).

Regarding claim 75, Teal, discloses a method as in claim 69, wherein said identifying comprises second data reducing said address information using a data reduction function, and maintaining a table of data reduced address information (Rejected under the same rationale as claim 1).

Regarding claim 76, Teal, discloses a method as in claim 75, wherein said second data reducing comprises hashing said address information (Rejected under the same rationale as claim 8).

Regarding claim 77, Teal, discloses a method as in claim 69, further comprising testing contents of the frequent content to determine the presence of code in said frequent content (Rejected under the same rationale as claim 7).

Regarding claim 78, Teal, discloses a method as in claim 77, wherein said testing contents comprises identifying an opcode in said frequent content, determining a length of the opcode, and looking for another opcode at a location within said frequent content based on said length Rejected under the same rationale as claim 7).

Regarding claim 79, Teal, discloses a method as in claim 69, further comprising monitoring for scanning of addresses (Rejected under the same rationale as claim 11).

Regarding claim 88. Teal discloses a method for automatically identifying common content to use in identifying an intrusive network attack, comprising: obtaining a collection of data items to be analyzed to identify the network attack; reducing said data items in said collection to reduce said data collection to a reduced data collection of reduced data items, wherein the reduced data items in the reduced data collection have a smaller size and a constant predetermined relation with data items in the data collection and at least some of the data items in the data collection that differ are reduced to the same reduced data item; analyzing a plurality of said reduced data items to determine frequently occurring sections of message information indicative of a network attack; and carrying out an additional test on said frequently occurring sections of message information, comprising maintaining a first list of unassigned addresses, wherein the

unassigned addresses are maintained as reduced addresses that have a smaller size and a constant predetermined relation with the unassigned addresses and at least some of the unassigned addresses that differ are reduced to the same reduced address, forming a second list of source addresses that have sent to the unassigned addresses on said first list, wherein the source addresses are maintained as reduced addresses that have a smaller size and a constant predetermined relation with the source addresses and at least some of the source addresses that differ are reduced to the same reduced address, and comparing a current source of a frequently occurring section to said second list (Rejected under the same rationale as claim 1 and 12).

Regarding claim 89. Teal discloses a method for automatically identifying common content to use in identifying an intrusive network attack, comprising: obtaining a collection of data items to be analyzed to identify the network attack, wherein said data items comprise a first subset of a network packet including payload and header; reducing said data items in said collection to reduce said data collection to a reduced data collection of reduced data items, wherein the reduced data items in the reduced data collection have a smaller size and a constant predetermined relation with data items in the data collection and at least some of the data items in the data collection that differ are reduced to the same reduced data item; analyzing a plurality of said reduced data items to detect common elements, said analyzing reviewing for common content indicative of a

network attack; and obtaining a second subset of the same network packet for subsequent analysis (Rejected under the same rationale as claim 1 and 12).

Conclusion

4 Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHINWENDU C. OKORONKWO whose telephone number is (571)272-2662. The examiner can normally be reached on MWF 2:30 - 6:00, TR 9:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nasser Moazzami can be reached on (571) 272 4195. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Chinwendu C Okoronkwo/
Examiner, Art Unit 2136

/Nasser G Moazzami/
Supervisory Patent Examiner, Art Unit 2136